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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Enrico Calamai

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EXAMINER

COMLEY, ALEXANDER BRYANT

ART UNIT

PAPER NUMBER

3746

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/539,378	Applicant(s) CALAMAI, ENRICO	
	Examiner ALEXANDER B. COMLEY	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Claims

1. The Examiner acknowledges receipt of Applicant's amendments, remarks, and argument filed with the Office on October 15th, 2008 in response to the Non-Final Office Action mailed by the Office on July 18th, 2008. Per Applicant's response, Claims 1-5 have been cancelled, and Claims 6-13 have been newly-added. The Examiner has carefully considered each of Applicant's arguments and amendments, and they will be addressed below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 6-8 and 10-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,209,076 to Kauffman et al. directed to a

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Control System for Preventing Compressor Damage in a Refrigeration System in view of United States Patent Application Publication No. 2002/0141877 to Jayanth et al. directed to a Compressor Diagnostic System.

Regarding Independent **Claims 6 & 10**, Kauffman discloses a microprocessor-based compressor control device that detects abnormalities in a compressor's operation. In particular, Kauffman states "If a sensed condition is outside of a safety range and remains there for a time out period, an alarm condition is indicated and the device generates an alarm signal and shuts down the compressor." (Abstract) From this disclosure alone, it is clear that the monitoring system of Kauffman utilizes 1) Measured Parameters (i.e. sensed condition); 2) Manually-Entered Data (i.e. a safety range); and 3) Reference Parameters (i.e. time out periods). To begin, Kauffman discloses both "measured parameters" and "manually-entered parameters" by stating "In accordance with the invention, a microprocessor based monitoring device makes use of sensors which detect various conditions at selected locations in a refrigeration system. Pressure and temperature sensors on the suction side of the compressor provide information that allows the superheat to be computed. High and low safety limits for the superheat of the particular refrigerant can be entered. If the actual superheat falls outside of the programmed safety range, the compressor is automatically shut off and alarm signals are generated to indicate the presence of problem conditions." (Column 1, Line 64 – Column 2, Line 6) Applicant's third set of parameters (the reference parameters) are disclosed by Kauffman's "timeout periods". Kauffman states "Additional sensors monitor conditions such as the compressor discharge pressure and

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temperature, motor current draw and oil pressure. Again, safety limits are entered and the device automatically shuts down the compressor and provides an alarm signal if the system is operating outside of a safe operating range with respect to any of the conditions that are being monitored. In order to prevent aberrational or transient conditions from shutting down the compressor, each parameter that is being monitored is given a time out period during which an abnormal condition must continue before shut down occurs.” (Column 2, Lines 7-19) Kauffman goes on to state “In block 126, various time out periods are set at preprogrammed initial values. For example, an amperage high limit timer, a superheat start delay timer, an oil pressure low limit timer, a discharge temperature high limit timer and a discharge pressure high limit timer are all set at initial values which are either programmed at the factory or in the field through entries made on the key pad. “ (Column 5, Lines 46-53) Applicant does not define in the claims exactly what the reference values correspond to. Therefore, Kauffman's timeout periods can be considered reference parameters indicating the operational state of the compressor. To conclude, from the disclosures listed above, it is apparent that comparisons are completed between the three types of compressor parameters, and abnormalities in the compressor are thereby detected. However, although Kauffman discloses the majority of claimed elements present in Applicant's independent claims, it fails to substantially and specifically disclose a database of previously stored anomalies.

However, the Jayanth et al. portion of the combination successfully discloses the final remaining element missing from the Kauffman reference. In particular, Jayanth

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discloses a compressor diagnostic system for use in a refrigeration or air conditioning system that is designed to detect faults in the compressor and alert the user to the exact nature and cause of the fault from a pre-loaded database of faults. To begin, Jayanth states "The present invention provides a device which is based on this principle. The device of the present invention continuously records the status of the protector (open or closed) as a function of time and then it analyzes this status information to determine a faulty situation. The device goes further and isolates the fault to either the compressor or to the rest of the system. Once the fault has been isolated, the device will activate a visual indicator (light) and it will also send an electrical signal to any intelligent device (controller, computer, etc.) advising about the situation." (Paragraph 6) More specifically, Jayanth states "Logic circuitry 104 analyses the combination of current signals, the demand signal and the derived protector trip frequencies to determine if a fault condition exists. Logic circuitry also has the unique capability of identifying a specific cause based on some faults." (Paragraph 29) Most importantly, however, is Jayanth's specific disclosure regarding a plurality of stored fault codes that are detected and displayed by the monitoring system in order to accurately tell a technician the characteristics of the fault. In particular, Jayanth states "This scheme of the blinking of light 112 for a specific number of times is employed to visually communicate to the technician the various types of faults detected by logic circuitry 104. While the present invention utilizes blinking light 112 to convey the fault codes, it is within the scope of the present invention to utilize a plurality of lights to increase the effectiveness of conveying a large number of fault codes if desired." (Paragraph 30)

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Both Kauffman and Jayanth are specifically aimed at protecting compressors from faults and/or operational anomalies in order to increase compressor life.

Therefore, to one of ordinary skill desiring a longer-lasting compressor system, it would have been obvious to utilize the techniques disclosed in Kauffman in combination with those seen in Jayanth in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the monitoring system of Kauffman with the database of predetermined faults seen in Jayanth in order to obtain predictable results; those results being a better-protected compressor system that accurately alerts a user to the nature of the fault.

5. In regards to dependent **Claims 7-8 and 11-12**, the Kauffman portion of the combination specifically discloses utilizing the monitoring system to insure a compressor's adherence to observed operating trends (i.e. design specifications). In particular, Kauffman states "The device of the present invention can be incorporated as an original part of the refrigeration system, it can be added as an after market item permanently installed on an existing refrigeration system, or it can be used as a portable service tool which can be temporarily attached to different refrigeration systems in order to obtain representative samples of the operating characteristics. The data can be collected over an extended time period to indicate any trends that may be present." (Column 2, Lines 36-40) Hence, Kauffman's system utilizes design specifications (i.e. operating characteristics) in another comparison in order to determine if a particular compressor system is functioning similarly to other comparable systems. Kauffman

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goes on to disclose utilizing these design specifications in a design program (i.e. graph, etc) by stating "For example, each condition can be sensed every ten minutes over a period of five days, and the data can be presented in the form of a graph or in any other meaningful format." (Column 2, Lines 41-44) Therefore, to one of ordinary skill desiring a more efficient compressor system, it would have been obvious to utilize the techniques disclosed in Kauffman in combination with those seen in Jayanth in order to obtain predictable results (i.e. a compressor that operates within spec).

6. **Claims 9 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,209,076 to Kauffman et al. in view of United States Patent Application Publication No. 2002/0141877 to Jayanth et al as applied to claims 6-8 and 10-12 above, and further in view of United States Patent No. 6,448,982 to Klapper et al. directed to a System for Graphically Generating Logic for a Cause and Effects Matrix..

The Klapper et al. portion of the combination discloses the use of a "cause-and-effect" matrix for use in a monitoring system. Moreover, Klapper specifically discloses a matrix database and corresponding digital computer by stating "The system includes a general purpose digital computer that incorporates a matrix programming tool to input data defining the matrix and generate a matrix database. The tool also transfers the matrix database to a programmable logic controller." (Abstract) Furthermore, with particular reference to Figure 1 of Klapper, it can be seen the multiple critical limits are placed in each row of the matrix with corresponding descriptions of the specific

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corresponding anomalies. Some examples of Klapper's system anomalies include high process flow and high or low fuel pressures. Klapper goes on to describe the structure of the control matrix by stating "The present invention enables a user to graphically create and configure a matrix with data that defines input elements or variables that require monitoring, output responses to changes in the input elements/variables, also referred to as input parameters, being monitored and the relationship between the input elements/variables and the output responses. Once the matrix is created, the user can transfer the defining data to a programmable logic controller 78 to generate logic to implement the matrix. The programmable logic controller 78, as illustrated in FIG. 2 may comprise a central processing unit 7, an input device 9, an output device 11, and a memory element 13. The memory element 13 may be a combination of read only memory (ROM) and random access memory (RAM)." (Column 3, Lines 40-53) Klapper further states that a user can add specific anomalies to the matrix in order to monitor various desired aspects of the system. Therefore, to one of ordinary skill desiring a more accurately controlled compressor system, it would have been obvious to utilize the techniques disclosed in the Kauffman-Jayanth combination in combination with those seen in Klapper et al in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the monitoring system of the Kauffman-Jayanth combination with the anomaly-specific matrix of Klapper et al. in order to obtain predictable results; those results being a more accurately controlled compressor system that monitors specific anomalies.

Response to Arguments

7. Applicant's arguments with respect to Claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER B. COMLEY whose telephone number is (571)270-3772. The examiner can normally be reached on M-F 7:30am - 5:00am EST (Alternate Fridays Off). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon C. Kramer can be reached on (571)-

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272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander B Comley/
Examiner, Art Unit 3746

/Devon C Kramer/
Supervisory Patent Examiner, Art
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ABC